# Character Strengths – Stability, Change, and Relationships with Well-Being Changes — Source link ⧉

Fabian Gander, Jennifer Hofmann, René T. Proyer, Willibald Ruch

**Institutions:** University of Zurich, Martin Luther University of Halle-Wittenberg

Related papers:

- Values in Action Inventory of Strengths (VIA-IS): Adaptation and Validation of the German Version and the Development of a Peer-Rating Form

- The relationships of character strengths with coping, work-related stress, and job satisfaction

- Character Strengths and PERMA: Investigating the Relationships of Character Strengths with a Multidimensional Framework of Well-Being

- The role of character strengths for task performance, job dedication, interpersonal facilitation, and organizational support.

- What good are character strengths beyond subjective well-being? The contribution of the good character on self-reported health-oriented behavior, physical fitness, and the subjective health status

Year: 2020

# Character Strengths – Stability, Change, and Relationships with Well-Being Changes

Gander, Fabian ; Hofmann, Jennifer ; Proyer, René T ; Ruch, Willibald

Abstract: Character strengths are positively valued personality traits that are assumed to be stable across time and situations, but also malleable due to cultivation or deliberate intervention. Also, studies showed that character strengths are robustly related to well-being. Consequently, character strengths have often been used in interventions aimed at increasing well-being. However, the stability of character strengths and the longitudinal relationships with well-being are widely unexplored: First, previous reports on the stability of character strengths have mainly focused on one assessment instrument only and second, they did not consider other indicators of stability (and malleability) besides rank-order stability, (i.e., mean-level stability). In this longitudinal study, we assessed character strengths and well-being at two time points and examined the stability and malleability of character strengths and the convergence of changes in character strengths and well-being by means of correlation analyses. Two samples (n1 = 601, n2 = 1162) completed different measures of character strengths and instruments for the assessment of well-being, ill-being, and health within up to three and a half years. Results showed that character strengths are stable over longer time periods (test-retest reliabilities ranging from rtt = .60–.83) and that relationships between changes in strengths and well-being are highly parallel to what has been reported in cross-sectional studies (strongest relationships for zest, hope, curiosity, and love). Furthermore, results suggest that some strengths, most predominantly humor, but also spirituality and prudence might be more amenable for change than others. These results might bear important information for selecting character strengths in interventions.

Running Head: STABILITY AND CHANGE IN CHARACTER STRENGTHS

Character Strengths – Stability, Change, and Relationships With Well-Being Changes

Authors

Fabian Gander

ORCID: 0000-0002-2204-8828

Jennifer Hofmann

ORCID: 0000-0003-3972-3831

René T. Proyer

ORCID: 0000-0001-7426-4939

Willibald Ruch

ORCID: 0000-0001-5368-3616

Author Notes

Fabian Gander, Jennifer Hofmann, and Willibald Ruch are at the Department of Psychology at the University of Zurich, Switzerland. René T. Proyer is at the Department of Psychology at the Martin-Luther University Halle-Wittenberg in Germany.

Correspondence concerning this article should be addressed to Fabian Gander, Section on Personality and Assessment, Department of Psychology, University of Zurich, Binzmuhlestrasse 14/ Box 7, 8050 Zurich, Switzerland, E-mail: f.gander@psychologie.uzh.ch

**Abstract**

Character strengths are positively valued personality traits that are assumed to be stable across time and situations, but also malleable due to cultivation or deliberate intervention. Also, studies showed that character strengths are robustly related to well-being. Consequently, character strengths have often been used in interventions aimed at increasing well-being. However, the stability of character strengths and the longitudinal relationships with well-being are widely unexplored: First, previous reports on the stability of character strengths have mainly focused on one assessment instrument only and second, they did not consider other indicators of stability (and malleability) besides rank-order stability, (i.e., mean-level stability). In this longitudinal study, we assessed character strengths and well-being at two time points and examined the stability and malleability of character strengths and the convergence of changes in character strengths and well-being by means of correlation analyses. Two samples ($n_1 = 601$, $n_2 = 1,162$) completed different measures of character strengths and instruments for the assessment of well-being, ill-being, and health within up to three and a half years. Results showed that character strengths are stable over longer time periods (test-retest reliabilities ranging from $r_{tt} = .60 - .83$) and that relationships between changes in strengths and well-being are highly parallel to what has been reported in cross-sectional studies (strongest relationships for zest, hope, curiosity, love). Furthermore, results suggest that some strengths, most predominantly humor, but also spirituality and prudence might be more amenable for change than others. These results might bear important information for selecting character strengths in interventions.

**Character Strengths – Stability, Change, and Relationships With Well-Being Changes**

**Introduction**

Character strengths represent psychological traits that cover positive aspects of personality (Peterson & Seligman, 2004). As for traits in general, character strengths are assumed to be relatively stable over time, but in comparison to more traditional personality traits, such as the Big Five (John & Srivastava, 1999), the element of malleability is explicitly included in the conceptualization (however, see also Udayar, Urbanaviciute, & Rossier, 2018 in this special issue). Thus, a good character may be cultivated, trained or targeted by interventions, leading to changes in ones character strengths. Moreover, various studies have provided support for the notion that character strengths are strongly related to different indicators of well-being and the absence of ill-being (e.g., Gillham et al., 2011; Hausler et al., 2017; Martínez-Martí & Ruch, 2014; Ruch, Huber, Beermann, & Proyer, 2007; Ruch et al., 2010), as well as indicators of physical health (e.g., Proyer, Gander, Wellenzohn, & Ruch, 2013). Due to these strong relationships, character strengths have often been used as a starting point for positive psychology interventions aiming at improving well-being (Ghielen, Woerkom, & Meyers, 2017). Such programs have frequently been applied to a broad array of settings, including education (e.g., Madden, Green, & Grant, 2011; Proctor et al., 2011; see also Lavy, 2018 in this special issue) or work (e.g., Harzer & Ruch, 2015; see also Heintz & Ruch, 2018 in this special issue). While some of these interventions used the individual's highest strengths as a basis for the interventions (e.g., Gander, Proyer, Ruch, & Wyss, 2013; Proyer, Gander, Wellenzohn, & Ruch, 2015; Seligman, Steen, Park, & Peterson, 2005), others used those strengths that showed the highest relationships to well-being in general (Proyer, Ruch, & Buschor, 2013).

Although most of these strengths-based intervention programs yielded positive results with respect to the increases in well-being, yet, research in this area has been limited in two

regards: Firstly, the relationships between strengths and well-being have only been analyzed in cross-sectional studies (with few exceptions, see Proyer, Ruch, & Buschor, 2013). This is problematic, as a covariation between two variables at one point in time does not necessarily mean that changes in the one variable go along with changes in the other one. Thus, although we strongly assume that changes in a strength (e.g., an increase through training) would lead to changes in well-being, this has not explicitly been tested for all character strengths using the same methodology, what would allow for direct comparisons among strengths. Therefore, information on the longitudinal relationships of character strengths and well-being is needed. For the design of interventions, this knowledge will consequently inform about the selection of those strengths with the strongest relationships with well-being. One might argue that particularly those strengths that demonstrate not only the strongest correlates cross-sectionally (see Park et al., 2004; Proyer, Buschor, & Ruch, 2013), but also those that demonstrate robust associations across longer time spans should be preferred as a basis for intervention studies.

Secondly, not all strengths might be equally prone to change – some strengths might be more easily and, thus, may lead to greater benefit for the participants. For example, so called "tonic strengths" (e.g., strengths such as kindness or humor that can be shown "steadily, in a variety of settings"; Peterson & Seligman, 2004; p. 23) might be more easily trainable than "phasic strengths" (e.g., a strength such as bravery that "comes and goes because it is relevant only in settings that afford it"; Peterson & Seligman, 2004; p. 23).

The present article aims at providing first information on these issues by examining stability and changes in character strengths and their relationships with changes in well-being across time. For this purpose, we are examining two samples that completed measures of character strengths and well-being over the course of three and a half years (Sample 1) and two years (Sample 2).

**Character Strengths**

Peterson and Seligman's (2004) Values-in-Action (VIA) Classification of Strengths is a list of 24 positively valued personality traits, so called character strengths (see also Höfer et al., 2018 in this special issue). Entries for the classification were selected based on their fulfillment of ten criteria. The fifth of these criteria covers the assumption that strengths should be stable: "A strength needs to be manifest in the range of an individual's behavior— thoughts, feelings, and/or actions—in such a way that it can be assessed. It should be trait-like in the sense of having a degree of generality across situations and stability across time" (Peterson & Seligman, 2004; p. 23). Nonetheless, malleability is also assumed: "We treat [character strengths] as stable, by definition, but also as malleable, again by definition" (Peterson & Seligman, 2004; p. 12). So far, there is little empirical evidence to what degree character strengths (and existing assessment instruments) fulfill these definitions of malleability and stability

**Assessment of Character Strengths and Stability**

Previous studies using the standard instrument for the assessment of strengths (the *Values in Action Inventory of Strengths*, VIA-IS; Peterson, Park, & Seligman, 2005) showed rank-order stabilities ranging from $r_{tt}$ = .62 (authenticity) to $r_{tt}$ = .85 (spirituality) over a time period of nine months (Ruch et al., 2010). Hausler and colleagues (2017) reported similar stabilities for a time period of twelve months using a shorter version of the questionnaire with 120 items, ranging from $r_{tt}$ = .56 (authenticity) to $r_{tt}$ = .86 (spirituality).

Recently, another assessment instrument for research purposes has been developed (the *Character Strengths Rating Form,* CSRF*;* Ruch, Martínez-Martí, Proyer, & Harzer, 2014) that uses 24 descriptions of character strengths. This instrument is considerably shorter (24 instead of 240 items), and, thus, does not provide a fine-grained measurement of the 24 strengths, but allows for a quick screening of the strengths. Nonetheless, Ruch and colleagues (2014) report a median correspondence of $r$ = .56 with the VIA-IS, ranging from $r$ = .41

(judgment) to $r = .77$ (spirituality). The CSRF allows for an economic assessment of the strengths in settings where testing time is limited and only short scales can be used (e.g., large-scale longitudinal research projects).

With regard to available information on assessment instruments, there are three gaps in existing research concerning the stability and malleability of character strengths: Firstly, no information on the stability of the CSRF is available until now. Thus, it is still unclear, whether the high stabilities of the character strengths are merely a characteristic of the used instrument (i.e., the VIA-IS) or can also be attributed to the underlying constructs (i.e., the strengths themselves).

Secondly, to the best of our knowledge no study has also considered different aspects of stability, such as mean-level stability. Currently, only information on rank-order stability is available. Mean-level stability is theoretically distinct from rank-order stability. Rank-order stability describes whether the relative position of individuals on a given trait is consistent over time. Subgroups of people might show substantial changes in (mean-levels of) a trait, while their rank order within the group is maintained. Vice versa, the rank order between individuals might change while no changes in means across the sample are observed (e.g., if the amount of increases and decreases is balanced). From an intervention perspective, it is of primary interest whether mean-level changes are possible, that is whether it is possible for an individual or a subgroup of people to increase their expression on a trait – regardless of their relative positioning in the population. Further, there are multiple possibilities of analyzing mean-level changes: Firstly, the total amount of changes in a trait of a population can be analyzed, and, for example, compared with the amount of changes in another trait. However, it is possible that the amount of mean-level changes is confounded with the measurement error due to the limited reliability of a measurement instrument. Therefore, secondly, it is possible to analyze the frequency of those changes that are large enough that chance can be

ruled out, taking into account the reliability of a measure (i.e., a Reliable Change Index can be computed; Christensen & Mendoza, 1986).

Thus, analyzing mean-level changes would allow for comparing the malleability *between* character strengths and give first evidence to which strengths might be more easily altered than others in daily life (as opposed to changes through deliberate interventions). There is only very limited information on changes in character strengths available so far. Peterson, Park, Pole, D'Andrea and Seligman (2008) showed a linear trend between the amount of traumatic events people experienced and the mean-levels in 11 out of 24 character strengths, thus suggesting that (coping with) trauma might go along with character growth. Whereas this study provided important first evidence for possibilities for character growth, it was limited by its cross-sectional design, no direct assessment of changes, and its focus on specific, negative events.

Thirdly, to the best of our knowledge no studies have been published that also considered time intervals of multiple years, and it would be interesting to examine whether the comparable stabilities are found over longer time periods. One might assume that changes in character strengths take place over longer periods of time and could take several years to unfold.

**Character Strengths, Well-Being, Ill-Being, and General Health**

With regard to the relationships of character strengths with well-being, there is ample evidence from cross-sectional studies suggesting strong positive relationships of almost all strengths to well-being indicators (e.g., Brdar & Kashdan, 2010; Buschor, Proyer, & Ruch, 2013; Hausler et al., 2017; Khumalo, Wissing, & Temane, 2008; Peterson, Ruch, Beermann, Park, & Seligman, 2007; Ruch et al., 2007; see also Baumann, Ruch, Margelisch, Gander, & Wagner, 2018 in this special issue). The only exception is modesty, which is typically unrelated to well-being across studies. Furthermore, across several studies the same five

strengths showed the (numerically) highest relationships with well-being, namely curiosity, zest, love, gratitude, and hope (e.g., Buschor, Proyer, & Ruch, 2013; Park, Peterson, & Seligman, 2004; Peterson et al., 2007; Proyer, Gander, Wyss, & Ruch, 2011; Ruch et al., 2007). With regard to ill-being, fewer information is available. One study, based on factor analyses of character strengths, reported that other-directed character strengths such as kindness or teamwork went along with fewer depressive symptoms in the future (Gillham et al., 2006). Others examined specific character strengths and reported associations between gratitude and hope with (fewer) mental health problems (Macaskill & Denovan, 2014). Finally, one study examined the relationships between character strengths and physical health and reported persistence, zest, self-regulation, hope, and humor to go along with better physical health (Proyer et al., 2013).

Several intervention studies that have been able to show that training character strengths goes along with increases in well-being and reductions of depressive symptoms and thus suggesting also a potential causal relationship: For example, several studies have been conducted that instructed participants to use their individual top five strengths in a new way on a daily basis for one week (Mitchell, Stanimirovic, Klein, & Vella-Brodrick, 2009; Mongrain & Anselmo-Matthews, 2012; Proyer et al., 2015; Seligman et al., 2005). This intervention has been shown to be very effective for increasing well-being and decreasing depressive symptoms, also for longer time periods (up to six months) after the intervention finished. Other studies aimed at fostering a set of preselected strengths. For example, Proyer et al. (2013) trained two different sets of character strengths and compared the results with a waitlist control group: One group trained five strengths with very strong relationships with well-being (i.e., curiosity, hope, gratitude, zest, and humor), a second group trained five strengths with weaker relationships with well-being (i.e., creativity, love of learning, open-mindedness, kindness, and appreciation of beauty and excellence). Results show that training

strengths relating highly to well-being led to an increase in subjective well-being in comparison to the control group, whereas training strengths that lowly correlate to well-being did not increase subjective well-being as compared to the control group. However, no study so far explicitly examined whether the changes in well-being, and ill-being also went along with changes in character strengths. Thus, it is still unclear whether the cross-sectional relationships of character strengths also translate to results from longitudinal studies. In other words, does well-being increase and ill-being decrease when strengths increase?

**The present study**

The present study aims at narrowing existing gaps in the literature by examining the rank-order stability of character strengths and their relationships to well-being in two samples: The first sample completed the more reliable VIA-IS twice within a time period of three and a half years, whereas the second sample completed the shorter CSRF within two years. Firstly, we expected test-retest correlations of medium to high size for the VIA-IS, and smaller correlations for the CSRF of medium size, but overall a similar pattern of rank-order stabilities between VIA-IS and CSRF. Secondly, we examined the mean-level stability in Sample 1 that completed the VIA-IS. For mean-level stabilities, we did not formulate hypotheses, but expected a similar pattern as for rank-order stabilities.

Thirdly, we examined the associations of the changes in character strengths with changes in a broad array of indicators of well-being (i.e., overall well-being and life satisfaction), mental ill-being (mental health problems in general and depressive symptoms), and general health. Based on past findings (e.g., Ruch et al., 2010), we expected changes in all strengths (with the exception of modesty) to go along with changes in well-being: Strongest correlations were expected for the strengths of curiosity, zest, love, gratitude, and hope. For changes in ill-being, no information on character strengths overall are available, but we expected most strengths to be negatively correlated, but with smaller coefficients overall,

while the same strengths are expected to yield to highest relationships. Finally, for self-reported general health, we expected fewer relationships but similar findings as in the cross-sectional study by Proyer and colleagues (2013): Positive relationships of zest, hope, self-regulation, persistence, and humor with general health.

We did not study the effects of a specific intervention or life events on changes in character strengths and well-being – instead, we studied naturally occurring changes in these variables – during the several years time spans, some participants experienced major positive life events or were actively working on cultivating their character, while others suffered from negative, or even traumatic life events. Therefore, we are not interested in studying changes in a specific direction but are instead looking at changes regardless of whether they are positive (i.e., an increase in strengths), or negative (i.e., decreases in strengths) and whether they are accompanied by comparable changes in the well-being criteria.

## Method

### Participants

Sample 1 consisted of $n_1 = 601$ participants (96.7% female) aged 19 to 81 ($M = 43.96$, $SD = 9.67$ at the first measurement period). Most participants were German (89.4%), Swiss (5.0%), or Austrian (2.3%). More than half of the sample (57.6%) held a degree from a university or a university of applied sciences, while about a fifth (20.3%) held a diploma allowing them to attend such universities. Another fifth (21.0%) of the sample completed vocational training, 1.0% completed mandatory school, while one participant did not complete school. About half of the sample (49.4%) were currently married or in a registered partnership, 21.7% were in a partnership, 17.3% were single, and 11.6% divorced, living in separation, or widowed. Most participants (79.7%) were currently employed. Thus, besides being predominantly female, the sample was rather diverse with regard to sociodemographic characteristics.

Sample 2 consisted of $n_2 = 1162$ participants (51.2% female) aged 27 to 57 ($M = 43.86$, $SD = 8.32$ at the first measurement period). Most participants were Swiss (73.8%). More than a third (38.1%) held a degree from a university or a university of applied sciences, while 7.6% held a diploma allowing them to attend such universities. About a third (37.1%) of the sample completed vocational training, 4.7% completed mandatory school, and one participant did not complete mandatory school. The remaining participants (7.9%) had a different educational background or gave no information. More than half of the sample (58.0%) were currently married or in a registered partnership, 25.4% were currently unmarried, 12.9% divorced, living in separation, or widowed, while 3.6% did not provide information on their marital status. All participants were currently employed.

**Instruments**

### Character Strengths Measures

The *Values in Action Inventory of Strengths* (VIA-IS; Peterson, Park, & Seligman, 2005; in the German version by Ruch et al., 2010) is self-report instrument for the assessment of the 24 character strengths suggested in Peterson and Seligman's (2004) VIA classification. The instrument uses 240-items (10 per scale) on a five-point Likert-style scale (from 5 = "very much like me" to 1 = "very much unlike me"). A sample item is "I never quit a task before it is done" (persistence). The VIA-IS is currently the standard instrument for the assessment of character strengths and has been widely used in research (see Ruch et al., 2010). Internal consistencies in the present study were acceptable (all close or above $\alpha = .70$ and comparable to earlier findings (see Table A1 in the online supplementary section).

The *Character Strengths Rating Form* (CSRF; Ruch, Martínez-Martí, Proyer, & Harzer, 2014) is a short measure for the assessment of the 24 strengths suggested in the VIA classification. The German language version was used, providing 24 short descriptions of each strength on a nine-point Likert scale (from 1 = "not like me at all" through 9 =

"absolutely like me"). A sample item is "Curiosity (interest, novelty-seeking, openness to experience): Curious people take an interest in all ongoing experience in daily life for its own sake and they are very interested in, and fascinated by, various topics and subjects. They like to explore and discover the world, they are seldom bored, and it's easy for them to keep themselves busy". The CSRF was created for research purposes and can only be used for group-level comparisons. Ruch et al. (2014) report relationships ranging from $r = .41$ to $r = .77$ (median = .56) with the VIA-IS.

**Well-Being Measures**

The *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; used in the German adaptation as used by Ruch et al., 2010) is a five-item questionnaire for the assessment of life satisfaction, the cognitive component of subjective well-being. It uses a seven-point Likert scale (from 7 = "strongly agree" to 1 = "strongly disagree"). A sample item is "In most ways, my life is close to my ideal". The SWLS is widely used in research and shows good psychometric properties (Pavot & Diener, 1993). Internal consistencies were high (see Table 3).

The *Authentic Happiness Inventory* (AHI: Seligman et al., 2005; in the German version by Proyer, Gander, Wellenzohn, & Ruch, in press) is a self-report questionnaire for the assessment of overall well-being and contains various indicators tapping into subjective and psychological well-being. Each item consists of a set of five statements (e.g., "I have sorrow in my life" to "My life is filled with joy"). At the first measurement point (Sample 1) a 33-item version was used, while at the second measurement point a shortened, 24-item version was used. Only 19 items are identical between the two versions. Therefore, all analyses were based on those 19 identical items. The AHI has been often used, especially in intervention studies, and good psychometric properties are reported (Proyer et al., in press). Internal consistencies were high (see Table 2).

**Mental Ill-Being Measures**

The *Center for Epidemiologic Studies Depression Scale* (CES-D; Radloff, 1977; in the German version by Hautzinger & Bailer, 1993) is a screening instrument for depressive symptoms in normal populations. It contains 20 items that are answered on a 4-point scale (from 0 = "rarely or none of the time [less than 1 day]" to 3 = "most or all of the time [5–7 days]"). A sample item is "I felt depressed". The CES-D is one of the most frequently used measures for depressive symptoms and has good psychometric properties (Shafer, 2006). Internal consistencies were high (see Table 2).

The *General Health Questionnaire-12* (GHQ-12; Goldberg, 1978; German adaptation by Ruch et al., 2012) is a 12-item screening measure for mental health problems including depression and anxiety. It uses a 4-point scale (from 1 = "not at all" to 4 = "much more than usual"). A sample item is "Have you lost much sleep over worry?". The GHQ-12 is widely used in research and has good psychometric properties (McCabe, Thomas, Brazier, & Coleman, 1996). Scores were recoded so that higher values denote *fewer* mental health problems. Internal consistencies were high (see Table 3).

**Health Measure**

*Self-rated health status* (SRH) was a single item ("In general, how is your health?") for the subjective assessment of overall general health (from 1 = "very bad" to 5 = "very good"). In various studies, this item showed good predictive validity (e.g., Idler & Benyamini, 1997).

**Procedure**

Participants in Sample 1 were recruited by advertisements in newspaper articles and online (in mailing lists, and online forums). All adults who were currently not in psychotherapeutic or psychopharmacological treatment were eligible for participation. They completed measures on character strengths (VIA-IS), and different measures of well-being

and mental ill-being (i.e., AHI, CES-D) online. They took part in two online intervention programs (see Gander, Proyer, Ruch, & Wyss, 2013) on Positive Psychology interventions. The two intervention programs were conducted within 3.5 years and participants completed the measures as part of the baseline assessments. In the present study, all those participants were analyzed that completed all questionnaires and could be matched between the two intervention programs. Over the period of the 3.5 years, all effects of the first intervention had worn off (Proyer et al., 2015). They were not paid but received an automated, individualized feedback on their character strengths on request.

Participants in Sample 2 completed measures on character strengths (CSRF), and different measures of well-being, ill-being, and general health (i.e., SWLS, GHQ-12, SRH). The participants were part of the NCCR-LIVES project (Swiss National Centre of Competence in Research LIVES—Overcoming vulnerability: Life course perspectives; see Maggiori, Rossier, Krings, Johnston, & Massoudi, 2016), a national longitudinal research project conducted over the course of seven years. Participants are representative of the working population in Switzerland and were aged between 25 and 55 at the beginning of the data collection. Participants were randomly sampled based on information from the Swiss Federal Statistics Office and completed the survey online, on phone, or on paper. They received a small gift after every completed wave (worth 20 Swiss Francs). In this article, we are presenting data of waves 2 and 4 (two years apart), since character strengths were not assessed in the other waves.

Participants in both samples gave informed consent for participation and both data assessments were conducted in line with the ethical guidelines of the Swiss Society for Psychology. According to the university's guidelines, no formal ethics approval was required for this study.

**Results**

**Rank-Order Stability**

First, we aimed to replicate existing results on rank-order stability of strengths. We analyzed the rank-order stability of character strengths across the different measurement instruments by means of computing test-retest correlations (see Table 1).

--------------------------

Insert Table 1 about here

--------------------------

Table 1 shows that when measured with the VIA-IS, the rank-order stabilities of character strengths over three and a half years were generally high and ranged from $r_{tt}$ (599) = .60 (leadership) to $r_{tt}$ (599) = .83 (spirituality). Numerically highest rank order stabilities (in descending order) were found for spirituality, creativity, and humor, while the strengths of teamwork, fairness, kindness, and leadership showed the lowest, yet still sufficiently high, coefficients. In line with the expectations, the general pattern of correlations as well as the size of the coefficients was highly comparable to what has been reported earlier for shorter time periods (e.g., nine months: $r_s$ [22] = .78, $p < .001$; Ruch et al., 2010).

As expected, lower coefficients were obtained for the CSRF over the two-year period, while still being of medium size overall. The coefficients ranged from $r_{tt}$ (1165) = .37 (fairness) to $r_{tt}$ (1165) = .69 (spirituality) with the highest stabilities for spirituality, creativity, and humor, and the lowest stabilities for fairness, authenticity, and open-mindedness (in descending order). Although there were some minor discrepancies in the rank order stabilities between the VIA-IS and the CSRF there was an overlap of moderate size between the coefficients ($r_s$[22] = .42, $p = .04$), indicating an acceptable convergence of the instruments.

**Mean-Level Stability**

Means and standard deviations are given as an online supplementary (Tables A1 and A2). For analyzing the mean-level stability, we applied two different procedures to the VIA-

IS[1]: Firstly, we examined group-level changes by analyzing the absolute average mean-level changes (by computing the square root of the squared differences between the two time points) for determining the overall level of change regardless of the direction of change (i.e., whether the scores increased or decreased). Absolute average mean-level changes are given in Table 1. Subsequently, in order to compare the changes between strengths, we ran a within subjects repeated measurement ANOVA (24 character strengths as repeated measures) that showed a significant difference among the strengths with regard to absolute changes, $F(23, 13,800) = 7.87$, $p < .001$, $\eta^2 = .013$. Post-hoc tests revealed that six of the strengths (i.e., persistence, zest, prudence, hope, humor, and spirituality) showed higher mean-level changes than on average, whereas eight strengths showed fewer changes than on average (i.e., curiosity, open-mindedness, perspective, authenticity, kindness, social intelligence, teamwork, and fairness). Overall, the size of mean-level changes positively related to the rank-order stabilities of the VIA-IS ($r_s[22] = .40$, $p = .055$) and the CSRF ($r_s[22] = .64$, $p < .001$).

Secondly, we analyzed individual-level changes by computing the Reliable Change Index (RCI; Christensen & Mendoza, 1986). The RCI accounts for the measurement unreliability in mean-level changes and therefore allows determining how many participants showed significant levels of changes where measurement error can be ruled out (with a probability of error of $p < .05$). The percentage of participants in each strength that reported a reliable change (regardless of the direction of the change) is given in Table 1. Additionally, we compared the empirical number of participants with reliable changes with the number of participants that would be expected if reliable change would follow a normal distribution (i.e., 5% of the population below and above the cut-off scores) by Chi-square tests. These revealed that for creativity, fewer reliable changes were reported than what would be assumed, while

---

[1] These analyses were not conducted for the CSRF since its single-item measurement format does not allow for a reliable assessment of mean-level changes.

six strengths showed more frequent reliable changes than expected (i.e., for the strengths of perspective, teamwork, fairness, prudence, humor, and spirituality). Overall, the number of participants with reliable changes was unrelated to rank-order stabilities (VIA-IS: $r_s$ [22] = -.21, $p$ = .328; CSRF: $r_s$[22] = .00, $p$ = .985) and mean-level changes in the VIA-IS ($r_s$ [22] = .00, $p$ = .986).

**Relationships of Character Change with Changes in Well-Being, Ill-Being, and General Health**

First, we examined the relationships between the measures of well-being, ill-being, and general health in Sample 1 (Table 2) and Sample 2 (Table 3). The relationships were all in line with the expectations and broadly replicated existing findings. The results indicated that the measures were not redundant (all correlations between the measures were $r$ [1165] $\leq$ .73); thus all measures covered different aspects.

-------------------------

Insert Table 2 about here

-------------------------

-------------------------

Insert Table 3 about here

-------------------------

For analyzing the convergence between changes in character strengths and changes in well-being, ill-being, and general health, we computed difference scores for both sets of variables and analyzed the correlations (Table 4).

-------------------------

Insert Table 4 about here

-------------------------

Table 4 shows that changes in 20 out of 24 strengths (assessed by the VIA-IS) were positively related with changes in well-being (AHI); the exceptions were teamwork, fairness, modesty, and prudence. Numerically highest coefficients in descending order were obtained for zest, hope, curiosity, humor, gratitude, and love. For the Character Strengths Rating Form (CSRF), 16 out of 24 strengths yielded positive relationships with changes in life satisfaction (SWLS), with highest coefficients for hope, creativity, zest, curiosity, and love. Changes in depressive symptoms and mental health problems went along with changes in 4 and 5 strengths, respectively: Depressive symptoms declined in those who reported increased levels of curiosity, zest, hope, and humor. Decreases in mental health problems went along with increases in curiosity, perspective, zest, leadership, and hope. Finally, positive changes in self-rated general health were positively related to increases in 13 out of 24 strengths, among them in hope, zest, leadership, spirituality, persistence, and prudence.

In addition to the individual relationships of strengths with measures of well-being, ill-being, and general health, we also computed the shared variance of changes in strengths with changes in these variables in order to estimate the overall amount of overlaps between changes in the different sets of constructs. Results showed that changes in strengths were able to predict variance of the changes in all measures, ranging from 4% (self-rated general health) to 18% (life satisfaction), with the exception of mental health (3% shared variance), which did not yield a significant result.

Finally, when examining those participants in Sample 1 who reported reliable increases in character strengths, we found significant increases in well-being for those with reliable increases in creativity, curiosity, bravery, persistence, zest, love, social intelligence, leadership, gratitude, hope, and humor (see Table A3 in the online supplementary section). A significant reduction of depressive symptoms however, was only reported for those participants with reliable increases in zest, and love. These results, although relying on

comparatively small sample sizes (ranging from $n = 10$ to $n = 39$), are widely parallel to the correlations between changes in strengths and well-being as shown in Table 4.

**Discussion**

This study focused on the mean-level and rank-order stability of character strengths and the relationships of changes in character strengths with changes in well-being, ill-being, and health. Results showed that character strengths are stable over time periods for up to three and a half years and that the longitudinal associations between character strengths and well-being, ill-being, and health are widely parallel to cross-sectional findings.

The study provides further evidence for the stability of character strengths in several regards: Firstly, previous findings on the rank-order stability of character strengths were confirmed (e.g., Hausler et al., 2017; Ruch et al., 2010) and extended by considering longer time periods of up to three and a half years. Secondly, these findings were corroborated by using a different instruments for strengths assessment (the Character Strengths Rating Form, Ruch et al., 2014) than the standard measure (the Values-in-Action Inventory of Strengths; Peterson et al., 2005). Thirdly, as a novel aspect, we also took mean-level changes on group and individual level into account. Importantly, the results support the notion that character strengths are stable over time across the different instruments and methods for analyzing change. The only exception was the number of participants that reported reliable changes (i.e., mean-level changes on individual level)– this indicator was widely unrelated to the rank-order stability and mean-level changes on group level. Further, there were also specific strengths for which the different indicators yielded different results. For example, spirituality has been found to yield the highest rank-order stability in this and earlier studies (e.g., Ruch et al., 2010), yet it also showed higher levels of mean-level changes on a group and individual level. Thus, while spirituality is very stable with regard to rank-order (e.g., most of those who are among the most spiritual today, will also be among the most spiritual in a couple of years, and

vice versa), it is possible that for those few individuals where change happens, the changes would be comparatively strong (e.g., people gaining or losing their faith).

Further, the study also provided first evidence that despite the long-term stability of character strengths, there is room for changes. However, the amount and frequency of changes seem to differ among strengths. Overall, strengths such as prudence, humor, and spirituality showed a consistent pattern of higher group-level and more frequent individual-level mean changes, respectively. For these strengths, we conclude that the changes are not only observed due to differences in reliability and the resulting larger measurement error, since all indicators of change were in agreement. For other strengths, such as persistence, zest, and hope, one of the indicators suggested stronger or more changes, whereas for creativity, curiosity, open-mindedness, authenticity, kindness, social intelligence, one of the analyses suggested weaker or fewer mean-level changes.

Additionally, the present study provided first evidence that the often reported strong relationships between character strengths and well-being (e.g., Hausler et al., 2017; Ruch et al., 2010) also hold in longitudinal studies: Results confirmed our expectations (positive associations for most strengths with strongest relationships for curiosity, zest, love, gratitude, and hope): Changes in most character strengths went along with changes in well-being and life satisfaction, while curiosity, zest, love, and hope were amongst those strengths yielding the strongest relationships. Unexpectedly, changes in gratitude and humor were unrelated to changes in life satisfaction while they often show positive relationships in cross-sectional studies (e.g., Ruch et al., 2010). With regard to ill-being, changes in hope, zest, and curiosity went along with decreases of depressive symptoms and mental health problems.

As expected, relationships of changes in well-being variables with changes in strengths measured by the CSRF were smaller than those assessed with the VIA-IS, which can mainly be attributed to the limited reliability of the CSRF. For this reason, we mainly

base our interpretations on the findings with the VIA-IS. Nonetheless, the findings with the CSRF allow for a first examination of these associations, whereas the size of the coefficients has to be regarded as a lower-bound estimate of the true relationships.

Further, changes in some strengths were positively related to (positive) changes in all indicators of well-being, ill-being, and general health, namely curiosity, zest, and hope. The findings with regard to general health were also mostly parallel to those reported in Proyer et al. (2013) and confirmed our expectations (i.e., positive relationships for zest, hope, self-regulation, persistence, and humor) and with positive relationships of the strengths of hope, zest, self-regulation, and persistence, while changes in humor did not go along with changes in general health in the present study. Humor has been linked to adaptive coping and keeping a light attitude in the face of adversity (for an overview, see Ruch & Hofmann, 2017; Ruch & McGhee, 2014; see also Hofmann, Heintz, Pang, & Ruch, 2018 in this special issue). Thus, it might be that humor increased as a result of facing threats to general health and well-being threats (and successfully coping with them), while the level of general health did not drop (i.e., could be maintained). However, changes in several other strengths showed positive associations with changes in general health, namely love of learning, social intelligence, teamwork, fairness, leadership, prudence, gratitude, and spirituality.

The findings of the present study are important for practical applications in several regards. Firstly, they confirmed the positive associations between changes in strengths with changes in well-being and provided support for the idea that targeting specific strengths (such as curiosity, zest, hope, gratitude, love, or humor) in intervention studies in order to increase well-being is a viable approach. Secondly, when combining these findings with those related to mean-level changes, the strengths of humor seems especially useful for interventions targeting well-being: The results suggest both, a strong relationship with well-being changes (although only with general well-being as measured by the AHI and not life satisfaction as

measured by the SWLS in the present study) and a potential large amenability for change, in comparison to the other strengths. This supports previous findings of humor-based intervention programs (Ruch & Hofmann, 2017; Ruch & McGhee, 2014; Wellenzohn, Proyer, & Ruch, 2016b, 2016a) that often have been found to be potent strategies for increasing well-being, while one study also was able to provide evidence for the malleability of humor in a multi-stage humor-intervention program (Ruch, Hofmann, Stolz, & Rusch, 2018). Nonetheless more research on changes in character strengths in general and the strength of humor in particular is warranted.

For this study, several limitations have to be noted. Of course, this study only considered naturally occurring changes in character strengths. This only offers weak evidence for the malleability of character, or whether strengths can also be changed deliberately. More convincing evidence would come from intervention studies aimed at training each character strength individually. Yet, it seems rather unrealistic from a practical and economic perspective to using a similar design with the inclusion of character strength trainings (for each of the 24 strengths) due to the large number of strengths that would need to be trained. Nonetheless, future studies also take into account possible reasons for these changes, such as critical life events. One might argue that specific events (e.g., the unexpected death of a close person, or experiencing a severe injustice) could trigger such changes. It will be interesting to follow this finding up in future research (e.g., by including interview data or more objective information on life changes). Such studies would allow for a better understanding of how and under which conditions character strengths might change. Further, while the current study focused on "possessing" character strengths, most intervention studies aim at increasing the application of strengths (e.g., Seligman et al., 2005). Since, the application and the possession of character strengths have been reported to be relevant for well-being (Huber et al., 2018), future studies might examine the effects of both on longitudinal changes in well-being.

While the present study considered statistically reliable changes, we did not consider practically important changes (e.g., Schmitt & Di Fabio, 2004). Future studies might also consider what minimum levels of changes in strengths are required for participants to perceive the change as beneficial (or goes along with an increase in well-being). A further limitation is that we relied on self-reports, and social desirability or changes in well-being might distort actual changes in character. Although we tried to avoid fallacies related to these problems by comparing the changes *among* character strengths, future studies on the malleability of character strengths might also consider using different data sources in addition to self-reports, such as informant reports.

Overall, the present study contributed to character strengths research and application in three ways. Firstly, we provided first evidence that the cross-sectional relationships between character strengths and well-being are paralleled by the relationships between changes in these constructs. Secondly, we showed that strengths are relatively stable, also over time periods of up to 3.5 years. Consequently, targeting strengths such as curiosity, zest, hope, gratitude, love, or humor in intervention studies might be an advisable approach for fostering well-being. Thirdly, the study provided first hints towards a differential amenability for change among character strengths. Especially, the character strength of humor might be more amenable for change than the other strengths in the VIA classification.

**References**

Baumann, D., Ruch, W., Margelisch, K., Gander, F., & Wagner, L. (2018). Character

strengths and life satisfaction in later life: An analysis of different living conditions.

*Applied Research in Quality of Life,* accepted.

Brdar, I., & Kashdan, T. B. (2010). Character strengths and well-being in Croatia: An

empirical investigation of structure and correlates. *Journal of Research in Personality*,

*44*, 151–154. https://doi.org/10.1016/j.jrp.2009.12.001

Buschor, C., Proyer, R. T., & Ruch, W. (2013). Self- and peer-rated character strengths: How

do they relate to satisfaction with life and orientations to happiness? *Journal of

Positive Psychology*, *8*, 116–127. https://doi.org/10.1080/17439760.2012.758305

Christensen, L., & Mendoza, J. L. (1986). A method of assessing change in a single subject:

An alteration of the RC index. *Behavior Therapy*, *17*, 305–308.

https://doi.org/10.1016/S0005-7894(86)80060-0

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life

scale. *Journal of Personality Assessment*, *49*, 71–75.

https://doi.org/10.1207/s15327752jpa4901_13

Gander, F., Proyer, R. T., Ruch, W., & Wyss, T. (2013). Strength-based positive

interventions: Further evidence for their potential in enhancing well-being and

alleviating depression. *Journal of Happiness Studies*, *14*, 1241–1259.

https://doi.org/10.1007/s10902-012-9380-0

Ghielen, S. T. S., Woerkom, M. van, & Meyers, M. C. (2017). Promoting positive outcomes

through strengths interventions: A literature review. *The Journal of Positive

Psychology*. https://doi.org/10.1080/17439760.2017.1365164

Gillham, J., Adams-Deutsch, Z., Werner, J., Reivich, K., Coulter-Heindl, V., Linkins, M., …

Seligman, M. E. P. (2011). Character strengths predict subjective well-being during

adolescence. *The Journal of Positive Psychology*, *6*, 31–44.

https://doi.org/10.1080/17439760.2010.536773

Goldberg, D. P. (1978). *Manual of the General Health Questionnaire*. Windsor, England:

NFER Publishing.

Harzer, C., & Ruch, W. (2015). Your strengths are calling: Preliminary results of a web-based

strengths intervention to increase calling. *Journal of Happiness Studies*, 1–20.

https://doi.org/10.1007/s10902-015-9692-y

Hausler, M., Strecker, C., Huber, A., Brenner, M., Höge, T., & Höfer, S. (2017).

Distinguishing relational aspects of character strengths with subjective and

psychological well-being. *Frontiers in Psychology*, *8*.

https://doi.org/10.3389/fpsyg.2017.01159

Hautzinger, M., & Bailer, M. (1993). *Allgemeine Depresssionskala (ADS) [General

Depression Scale]*. Göttingen, Germany: Hogrefe.

Heintz, S., & Ruch, W. (2018). Character strengths and job satisfaction: Differential

relationships across professions and adulthood. *Applied Research in Quality of Life*,

accepted.

Höfer, S., Gander, F., Höge, T., & Ruch, W. (2018). Editorial to the special issue „Character

strengths, well-being, and health in educational and vocational settings". *Applied

Research in Quality of Life*, accepted.

Hofmann, J., Heintz, S., Pang, D., & Ruch, W. (2018). Differential relationships of light and

darker forms of humor with mindfulness. *Applied Research in Quality of Life*,

accepted.

Huber, A., Strecker, C., Hausler, M., Kachel, M., Höge, T., & Höfer, S. (2018). Possession

and applicability of signature character strengths: What is essential for well-being,

work engagement, and burnout? *Applied Research in Quality of Life*, accepted.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health & Social Behavior, 38*, 21–37.

Khumalo, I. P., Wissing, M. P., & Temane, Q. M. (2008). Exploring the validity of the Values-In-Action Inventory of Strengths (VIA-IS) in an African context. *Journal of Psychology in Africa, 18*, 133–142. https://doi.org/10.1080/14330237.2008.10820180

Lavy, S. (2018). A review of character strengths interventions in 21st-century schools: Their importance and how they can be fostered. *Applied Research in Quality of Life,* accepted.

Macaskill, A., & Denovan, A. (2014). Assessing psychological health: the contribution of psychological strengths. *British Journal of Guidance & Counselling, 42*, 320–337. https://doi.org/10.1080/03069885.2014.898739

Madden, W., Green, S., & Grant, A. M. (2011). A pilot study evaluating strengths-based coaching for primary school students: Enhancing engagement and hope. *International Coaching Psychology Review, 6*(1), 71–83.

Maggiori, C., Rossier, J., Krings, F., Johnston, C. S., & Massoudi, K. (2016). Career pathways and professional transitions: Preliminary results from the first wave of a 7-year longitudinal study. In M. Oris, C. Roberts, D. Joye, & M. E. Stähli (Eds.), *Surveying human vulnerabilities across the life course* (pp. 131–157). Springer International Publishing. https://doi.org/10.1007/978-3-319-24157-9_6

Martínez-Martí, M. L., & Ruch, W. (2014). Character strengths and well-being across the life span: data from a representative sample of German-speaking adults living in Switzerland. *Frontiers in Psychology, 5*. https://doi.org/10.3389/fpsyg.2014.01253

McCabe, C. J., Thomas, K. J., Brazier, J. E., & Coleman, P. (1996). Measuring the mental health status of a population: A comparison of the GHQ-12 and the SF-36 (MHI-5).

*The British Journal of Psychiatry*, *169*, 516–521.

https://doi.org/10.1192/bjp.169.4.516

Mitchell, J., Stanimirovic, R., Klein, B., & Vella-Brodrick, D. (2009). A randomised

controlled trial of a self-guided internet intervention promoting well-being. *Computers*

*in Human Behavior*, *25*, 749–760. https://doi.org/10.1016/j.chb.2009.02.003

Mongrain, M., & Anselmo-Matthews, T. (2012). Do positive psychology exercises work? A

replication of Seligman et al. (2005). *Journal of Clinical Psychology*, *68*, 382–389.

https://doi.org/10.1002/jclp.21839

Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being.

*Journal of Social and Clinical Psychology*, *23*, 603–619.

https://doi.org/10.1521/jscp.23.5.603.50748

Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological*

*Assessment*, *5*, 164–172. https://doi.org/10.1037/1040-3590.5.2.164

Peterson, C., Park, N., Pole, N., D'Andrea, W., & Seligman, M. E. P. (2008). Strengths of

character and posttraumatic growth. *Journal of Traumatic Stress*, *21*, 214–217.

https://doi.org/10.1002/jts.20332

Peterson, C., Park, N., & Seligman, M. E. (2005). Assessment of character strengths. In G. P.

Koocher, J. C. Norcross, & S. S. Hill III (Eds.), *Psychologists' desk reference* (2nd

ed., Vol. 3, pp. 93–98). New York, NY: Oxford University Press.

Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of

character, orientations to happiness, and life satisfaction. *The Journal of Positive*

*Psychology*, *2*, 149–156. https://doi.org/10.1080/17439760701228938

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and*

*classification*. Oxford, UK: Oxford University Press.

Proctor, C., Tsukayama, E., Wood, A. M., Maltby, J., Eades, J. F., & Linley, P. A. (2011). Strengths Gym: The impact of a character strengths-based intervention on the life satisfaction and well-being of adolescents. *The Journal of Positive Psychology*, *6*, 377–388. https://doi.org/10.1080/17439760.2011.594079

Proyer, R. T., Gander, F., Wellenzohn, S., & Ruch, W. (2013). What good are character strengths beyond subjective well-being? The contribution of the good character on self-reported health-oriented behavior, physical fitness, and the subjective health status. *Journal of Positive Psychology*, *8*, 222–232.

Proyer, R. T., Gander, F., Wellenzohn, S., & Ruch, W. (2015). Strengths-based positive psychology interventions: a randomized placebo-controlled online trial on long-term effects for a signature strengths- vs. a lesser strengths-intervention. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00456

Proyer, R. T., Gander, F., Wellenzohn, S., & Ruch, W. (in press). The Authentic Happiness Inventory Revisited: Addressing its psychometric properties, validity, and role in intervention studies. *Journal of Well-Being Assessment*. doi:10.1007/s41543-018-0006-0

Proyer, R. T., Gander, F., Wyss, T., & Ruch, W. (2011). The relation of character strengths to past, present, and future life satisfaction among German-speaking women. *Applied Psychology: Health and Well-Being*, *3*, 370–384. https://doi.org/10.1111/j.1758-0854.2011.01060.x

Proyer, R. T., Ruch, W., & Buschor, C. (2013). Testing strengths-based interventions: A preliminary study on the effectiveness of a program targeting curiosity, gratitude, hope, humor, and zest for enhancing life satisfaction. *Journal of Happiness Studies*, *14*, 275–292. https://doi.org/10.1007/s10902-012-9331-9

Proyer, R. T., Wellenzohn, S., Gander, F., & Ruch, W. (2015). Toward a better understanding of what makes positive psychology interventions work: Predicting happiness and depression from the person × intervention fit in a follow-up after 3.5 years. *Applied Psychology: Health and Well-Being*, *7*, 108–128. https://doi.org/10.1111/aphw.12039

Radloff, L. S. (1977). The CES-D scale. A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401. https://doi.org/10.1177/014662167700100306

Ruch, W., Gander, F., & Wellenzohn, S. (2012). *German version of the General Health Questionnaire*. Unpublished research instrument, University of Zurich, Switzerland.

Ruch, W., & Hofmann, J. (2017). Fostering humour. In C. Proctor (Ed.), *Positive psychology interventions in practice* (pp. 65–80). Springer International Publishing. https://doi.org/10.1007/978-3-319-51787-2_5

Ruch, W., Hofmann, J., Stolz, H., & Rusch, S. (2018). The impact of the 7 Humor Habits Program on the sense of humor and satisfaction with life. *Humor: International Journal of Humor Research: Special Issue "Festschrift for Paul E. McGhee."* Advance Online Publication. https://doi.org/ 10.1515/humor-2017-0099

Ruch, W., Huber, A., Beermann, U., & Proyer, R. T. (2007). Character strengths as predictors of the "good life" in Austria, Germany and Switzerland. In Romanian Academy, "George Barit" Institute of History, Department of Social Research (Ed.), *Studies and researches in social sciences* (Vol. 16, pp. 123-131). Cluj-Napoca, Romania: Argonaut Press.

Ruch, W., Martínez-Martí, M. L., Proyer, R. T., & Harzer, C. (2014). The Character Strengths Rating Form (CSRF): Development and initial assessment of a 24-item rating scale to assess character strengths. *Personality and Individual Differences*, *68*, 53–58. https://doi.org/10.1016/j.paid.2014.03.042

Ruch, W., & McGhee, P. (2014). Humor intervention programs. In A. C. Parks & S. M.

Schueller (Eds.), *Handbook of positive psychological interventions* (pp. 193–197).

Oxford: Wiley-Blackwell.

Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. P. (2010).

Values in action inventory of strengths (VIA-IS): Adaptation and validation of the

German version and the development of a peer-rating form. *Journal of Individual

Differences*, *31*, 138–149. https://doi.org/10.1027/1614-0001/a000022

Schmitt, J. S., & Di Fabio, R. P. (2004). Reliable change and minimum important difference

(MID) proportions facilitated group responsiveness comparisons using individual

threshold criteria. *Journal of Clinical Epidemiology, 57*, 1008–1018.

https://doi.org/10.1016/j.jclinepi.2004.02.007

Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology

progress: Empirical validation of interventions. *American Psychologist*, *60*, 410–421.

https://doi.org/10.1037/0003-066X.60.5.410

Shafer, A. B. (2006). Meta-analysis of the factor structures of four depression questionnaires:

Beck, CES-D, Hamilton, and Zung. *Journal of Clinical Psychology*, *62*, 123–146.

https://doi.org/10.1002/jclp.20213

Shankland, R., & Rosset, E. (2017). Review of brief school-based positive psychological

interventions: A taster for teachers and educators. *Educational Psychology Review*, *29*,

363–392. https://doi.org/10.1007/s10648-016-9357-3

Udayar, S., Urbanaviciute, I., & Rossier, J. (2018). Perceived social support and Big Five

personality traits in middle adulthood: A 4-year cross-lagged path analysis. *Applied

Research in Quality of Life,* accepted.

Wellenzohn, S., Proyer, R. T., & Ruch, W. (2016a). How do positive psychology

interventions work? A short-term placebo-controlled humor-based study on the role of

the time focus. *Personality and Individual Differences*, *96*, 1–6.

https://doi.org/10.1016/j.paid.2016.02.056

Wellenzohn, S., Proyer, R. T., & Ruch, W. (2016b). Humor-based online positive psychology

interventions: A randomized placebo-controlled long-term trial. *The Journal of*

*Positive Psychology*, *11*, 584–594. https://doi.org/10.1080/17439760.2015.1137624

Table 1

*Stability and Changes in Character Strengths.*

| | VIA-IS ($n_1$) | | | CSRF ($n_2$) | |
|---|---|---|---|---|---|
| | $r_{tt}$ (3.5 years) | *M* Change | *SD* Change | Reliable Change | $r_{tt}$ (2 years) |
| Creativity | .78 | 0.32 | 0.26 | 3.16%[b] | .55 |
| Curiosity | .72 | 0.28[b] | 0.23 | 3.33% | .45 |
| Open-mindedness | .72 | 0.28[b] | 0.23 | 6.49% | .39 |
| Love of learning | .73 | 0.29 | 0.24 | 6.32% | .47 |
| Perspective | .70 | 0.28[b] | 0.22 | 6.82%[a] | .43 |
| Bravery | .70 | 0.31 | 0.25 | 5.16% | .46 |
| Persistence | .73 | 0.33[a] | 0.28 | 5.32% | .44 |
| Authenticity | .67 | 0.26[b] | 0.21 | 6.16% | .37 |
| Zest | .68 | 0.32[a] | 0.26 | 6.66% | .48 |
| Love | .69 | 0.31 | 0.26 | 5.66% | .47 |
| Kindness | .63 | 0.29[b] | 0.24 | 4.83% | .40 |
| Social intelligence | .68 | 0.27[b] | 0.22 | 6.66% | .46 |
| Teamwork | .66 | 0.28[b] | 0.23 | 7.15%[a] | .45 |
| Fairness | .66 | 0.27[b] | 0.23 | 7.65%[a] | .37 |
| Leadership | .60 | 0.30 | 0.25 | 6.66% | .50 |
| Forgiveness | .71 | 0.29 | 0.25 | 6.16% | .43 |
| Modesty | .72 | 0.30 | 0.24 | 3.99% | .46 |
| Prudence | .68 | 0.34[a] | 0.26 | 7.82%[a] | .43 |
| Self-regulation | .72 | 0.31 | 0.25 | 6.32% | .47 |
| Beauty | .72 | 0.30 | 0.24 | 5.82% | .49 |
| Gratitude | .70 | 0.31 | 0.26 | 6.49% | .49 |
| Hope | .69 | 0.34[a] | 0.29 | 5.66% | .50 |
| Humor | .76 | 0.32[a] | 0.26 | 7.49%[a] | .51 |
| Spirituality | .83 | 0.38[a] | 0.32 | 8.65%[a] | .69 |

*Notes.* $n_1$ = 601, $n_2$ = 1167. Beauty = Appreciation of Beauty and Excellence; VIA-IS = Values in Action Inventory of Strengths; CSRF = Character Strengths Rating From; $r_{tt}$ = Rank order stability (test-retest reliability); *M* change = Absolute average mean change. *SD* change = Standard deviation of the absolute average mean change. Superscripts denote a significant deviation from the between-strengths average change (= 0.30 for VIA-IS): a = above average; b = below average; Reliable Change = Percentage of participants who reported a reliable change. Superscripts denote a significant deviation from expectation based on a normal distribution (i.e., 5%; $\chi^2$ [$df$ = 1]). a = above expectation; b = below expectation.

Table 2

*Internal Consistencies, Stabilities Across 3.5 Years, and Correlations of Well-Being Measures in Sample 1.*

|          | T1 AHI | T1 CES-D | T2 AHI | T2 CES-D |
|----------|--------|----------|--------|----------|
| T1 AHI   | (.91)  |          |        |          |
| T1 CES-D | -.61   | (.92)    |        |          |
| T2 AHI   | **.68** | -.46    | (.91)  |          |
| T2 CES-D | -.47   | **.51**  | -.73   | (.91)    |

*Notes.* $n_1 = 601$. AHI = Authentic Happiness Index; CES-D = Center for Epidemiologic Studies Depression Scale. Boldface = stability estimates. Brackets = Internal consistencies (Cronbach's alpha). T1 = First Measurement Time Point. T2 = Second Measurement Time Point.
All correlations are significant at $p < .001$.

Table 3

*Internal Consistencies, Stabilities Across Two Years, and Correlations of Well-Being Measures in Sample 2.*

|          | T1 SWLS | T1 GHQ | T1 SRH | T2 SWLS | T2 GHQ | T2 SRH |
|----------|---------|--------|--------|---------|--------|--------|
| T1 SWLS  | (.91)   |        |        |         |        |        |
| T1 GHQ   | .53     | (.90)  |        |         |        |        |
| T1 SRH   | .43     | .44    | –      |         |        |        |
| T2 SWLS  | **.71** | .46    | .38    | (.92)   |        |        |
| T2 GHQ   | .36     | **.49** | .29   | .55     | (.89)  |        |
| T2 SRH   | .40     | .40    | **.63** | .47    | .47    | –      |

*Notes.* $n_2 = 1167$. SWLS = Satisfaction with Life Scale; GHQ = General Health Questionnaire 12; SRH = Self-rated General Health; Boldface = stability estimates. Values in brackets = Cronbach's alpha coefficients. The SRH does not allow for computing a reliability coefficient due to its single item format.
All correlations are significant at $p < .001$.

Table 4

*Relationships Among Changes in Character Strengths and Well-Being Measures*

| Character strengths | VIA-IS ($n_1$) | | CSRF ($n_2$) | | |
| --- | --- | --- | --- | --- | --- |
| | Well-being | Depressive Symptoms | Life Satisfaction | Mental Health Problems | Self-Rated General Health |
| Creativity | .13*** | -.05 | .13*** | .05 | .03 |
| Curiosity | .25*** | -.08* | .11*** | .06* | .07* |
| Open-mindedness | .11** | .02 | .03 | .04 | .05 |
| Love of learning | .16*** | -.03 | .07* | .05 | .07* |
| Perspective | .14*** | -.02 | .03 | .06* | .05 |
| Bravery | .14*** | -.03 | .06* | .05 | .04 |
| Persistence | .16*** | .06 | .07* | .05 | .08** |
| Authenticity | .11** | .08 | .08** | .00 | .04 |
| Zest | .34*** | -.15*** | .12*** | .09** | .10*** |
| Love | .18*** | -.06 | .11*** | .04 | .05 |
| Kindness | .11** | .04 | .06* | .01 | .03 |
| Social intelligence | .14*** | -.03 | .08** | .02 | .06* |
| Teamwork | .05 | -.01 | .08** | .04 | .06* |
| Fairness | .07 | -.03 | .04 | .00 | .07* |
| Leadership | .08* | -.04 | .08** | .06* | .09* |
| Forgiveness | .11** | -.04 | .06* | .04 | .00 |
| Modesty | -.01 | .05 | .03 | .03 | .04 |
| Prudence | .04 | .03 | .07* | .03 | .08** |
| Self-regulation | .09* | .02 | .05 | .02 | .07* |
| Beauty and excellence | .08* | -.02 | .05 | .00 | .03 |
| Gratitude | .21*** | -.04 | .00 | .03 | .06* |
| Hope | .30*** | -.16*** | .15*** | .11*** | .12*** |
| Humor | .25*** | -.13*** | .04 | .05 | .05 |
| Spirituality | .10** | -.04 | .07* | .01 | .09** |
| $R^2$ | .18*** | .08* | .06*** | .03 | .04* |

*Notes.* $n_1 = 601$, $n_2 = 1167$. Beauty = Appreciation of Beauty and Excellence; VIA-IS = Values in Action Inventory of Strengths; CSRF = Character Strengths Rating Form; Well-Being: Authentic Happiness Inventory; Depressive Symptoms: Center for Epidemiologic Studies Depression Scale; Life Satisfaction: Satisfaction with Life Scale; Mental Health Problems: General Health Questionnaire 12. Higher scores denote fewer mental health problems; Self-rated health: Single-item measure. $R^2$ = Explained variance in changes of well-being by all character strengths jointly.
* $p < .05$, ** $p < .01$, *** $p < .001$.

**Online Supplementary**

Table A1

*Mean Scores, Standard Deviations, and Internal Consistencies of the VIA-IS Scales at the two*

*Measurement Time Points*

| | T1 | | | T2 | | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | α | *M* | *SD* | α |
| Creativity | 3.50 | 0.62 | .87 | 3.55 | 0.61 | .89 |
| Curiosity | 3.90 | 0.49 | .80 | 3.96 | 0.48 | .81 |
| Open-mindedness | 3.71 | 0.46 | .78 | 3.78 | 0.47 | .81 |
| Love of learning | 3.93 | 0.50 | .83 | 3.95 | 0.51 | .85 |
| Perspective | 3.40 | 0.45 | .77 | 3.46 | 0.45 | .79 |
| Bravery | 3.47 | 0.50 | .77 | 3.58 | 0.49 | .78 |
| Persistence | 3.29 | 0.57 | .85 | 3.34 | 0.58 | .86 |
| Authenticity | 3.69 | 0.39 | .68 | 3.70 | 0.44 | .76 |
| Zest | 3.48 | 0.50 | .78 | 3.46 | 0.53 | .81 |
| Love | 3.77 | 0.48 | .76 | 3.88 | 0.50 | .78 |
| Kindness | 3.79 | 0.43 | .72 | 3.81 | 0.44 | .74 |
| Social intelligence | 3.66 | 0.42 | .73 | 3.73 | 0.43 | .77 |
| Teamwork | 3.49 | 0.43 | .74 | 3.55 | 0.43 | .74 |
| Fairness | 3.78 | 0.43 | .75 | 3.79 | 0.43 | .75 |
| Leadership | 3.49 | 0.42 | .73 | 3.58 | 0.44 | .78 |
| Forgiveness | 3.38 | 0.50 | .77 | 3.43 | 0.49 | .79 |
| Modesty | 3.13 | 0.51 | .75 | 3.12 | 0.49 | .77 |
| Prudence | 3.20 | 0.47 | .71 | 3.33 | 0.54 | .80 |
| Self-regulation | 3.10 | 0.51 | .70 | 3.14 | 0.55 | .75 |
| Beauty | 3.72 | 0.48 | .72 | 3.64 | 0.52 | .77 |
| Gratitude | 3.68 | 0.50 | .80 | 3.77 | 0.52 | .82 |
| Hope | 3.32 | 0.55 | .82 | 3.47 | 0.52 | .82 |
| Humor | 3.56 | 0.57 | .85 | 3.45 | 0.58 | .88 |
| Spirituality | 2.99 | 0.79 | .89 | 2.98 | 0.87 | .91 |

*Notes.* $n_1$ = 601. α = Cronbach's Alpha. VIA-IS = Values in Action Inventory of Strengths.

Table A2

*Mean Scores and Standard Deviations of the CSRF Scales at the two Measurement Time Points*

|  | T1 | | T2 | |
|---|---|---|---|---|
|  | *M* | *SD* | *M* | *SD* |
| Creativity | 6.44 | 1.84 | 6.61 | 1.73 |
| Curiosity | 7.00 | 1.59 | 7.07 | 1.51 |
| Open-mindedness | 6.91 | 1.49 | 6.97 | 1.45 |
| Love of learning | 6.92 | 1.56 | 6.98 | 1.55 |
| Perspective | 6.61 | 1.58 | 6.72 | 1.49 |
| Bravery | 6.34 | 1.69 | 6.37 | 1.66 |
| Persistence | 6.87 | 1.54 | 6.94 | 1.48 |
| Authenticity | 7.45 | 1.43 | 7.51 | 1.32 |
| Zest | 6.48 | 1.60 | 6.51 | 1.54 |
| Love | 6.96 | 1.54 | 7.04 | 1.51 |
| Kindness | 7.27 | 1.32 | 7.31 | 1.30 |
| Social intelligence | 7.05 | 1.39 | 7.04 | 1.47 |
| Teamwork | 6.83 | 1.52 | 6.70 | 1.59 |
| Fairness | 7.21 | 1.36 | 7.22 | 1.37 |
| Leadership | 6.54 | 1.71 | 6.59 | 1.73 |
| Forgiveness | 6.73 | 1.57 | 6.69 | 1.59 |
| Modesty | 6.49 | 1.76 | 6.43 | 1.66 |
| Prudence | 6.44 | 1.69 | 6.44 | 1.67 |
| Self-regulation | 6.02 | 1.76 | 5.97 | 1.77 |
| Beauty | 6.62 | 1.63 | 6.62 | 1.63 |
| Gratitude | 6.89 | 1.46 | 6.92 | 1.42 |
| Hope | 6.80 | 1.58 | 6.75 | 1.64 |
| Humor | 6.93 | 1.56 | 6.92 | 1.59 |
| Spirituality | 5.09 | 2.46 | 5.19 | 2.41 |

*Note.* $n2$ = 1167. CSRF = Character Strengths Rating Form.

Table A3

*Mean-Level Changes in Well-Being and Depressive Symptoms Across 3.5 Years for Those who Reported Reliable Changes in Character Strengths*

|  | | Mean-Level Change AHI | | | | Mean-Level Change CES-D | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | N | M | SD | t | p | M | SD | t | p |
| Creativity | 11 | 0.27 | 0.33 | 2.67 | 0.02 | 0.04 | 0.28 | 0.43 | .68 |
| Curiosity | 14 | 0.35 | 0.31 | 4.16 | 0.00 | 0.13 | 0.44 | 1.13 | .28 |
| Open-mindedness | 26 | 0.18 | 0.60 | 1.57 | 0.13 | -0.01 | 0.51 | -0.10 | .92 |
| Love of learning | 25 | 0.19 | 0.47 | 1.99 | 0.06 | 0.02 | 0.54 | 0.22 | .83 |
| Perspective | 29 | 0.11 | 0.37 | 1.58 | 0.13 | -0.07 | 0.53 | -0.71 | .49 |
| Bravery | 27 | 0.22 | 0.49 | 2.36 | 0.03 | 0.08 | 0.45 | 0.90 | .38 |
| Persistence | 21 | 0.24 | 0.52 | 2.14 | 0.05 | -0.05 | 0.43 | -0.48 | .64 |
| Authenticity | 20 | 0.16 | 0.45 | 1.64 | 0.12 | -0.15 | 0.45 | -1.45 | .16 |
| Zest | 19 | 0.53 | 0.47 | 4.90 | 0.00 | 0.24 | 0.46 | 2.27 | .04 |
| Love | 25 | 0.26 | 0.34 | 3.84 | 0.00 | 0.20 | 0.43 | 2.35 | .03 |
| Kindness | 16 | -0.04 | 0.31 | -0.46 | 0.65 | -0.07 | 0.49 | -0.58 | .57 |
| Social intelligence | 31 | 0.19 | 0.44 | 2.33 | 0.03 | 0.07 | 0.50 | 0.80 | .43 |
| Teamwork | 33 | 0.05 | 0.41 | 0.64 | 0.53 | 0.12 | 0.53 | 1.25 | .22 |
| Fairness | 23 | 0.03 | 0.43 | 0.33 | 0.75 | 0.25 | 0.65 | 1.82 | .08 |
| Leadership | 31 | 0.18 | 0.41 | 2.47 | 0.02 | 0.16 | 0.46 | 1.95 | .06 |
| Forgiveness | 25 | 0.13 | 0.38 | 1.72 | 0.10 | 0.09 | 0.41 | 1.05 | .30 |
| Modesty | 12 | 0.12 | 0.50 | 0.82 | 0.43 | 0.24 | 0.50 | 1.66 | .12 |
| Prudence | 39 | 0.06 | 0.45 | 0.86 | 0.40 | 0.07 | 0.53 | 0.85 | .40 |
| Self-regulation | 22 | 0.12 | 0.39 | 1.40 | 0.18 | 0.06 | 0.61 | 0.44 | .67 |
| Beauty | 10 | -0.07 | 0.26 | -0.88 | 0.40 | -0.09 | 0.48 | -0.59 | .57 |
| Gratitude | 33 | 0.17 | 0.46 | 2.14 | 0.04 | 0.07 | 0.66 | 0.65 | .52 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hope | 30 | 0.31 | 0.57 | 3.02 | 0.01 | 0.15 | 0.49 | 1.65 | .11 |
| Humor | 11 | 0.32 | 0.37 | 2.80 | 0.02 | 0.35 | 0.70 | 1.66 | .13 |
| Spirituality | 25 | 0.18 | 0.54 | 1.64 | 0.11 | 0.23 | 0.63 | 1.78 | .09 |

*Notes.* AHI = Authentic Happiness Index; CES-D = Center for Epidemiologic Studies Depression Scale. Significance tests refer to paired-samples t-tests across the two measurement points.